



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,616	07/24/2003	Yukihiro Kumagai	501.42841X00	7919
20457	7590	05/03/2005	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873				VU, HUNG K
ART UNIT		PAPER NUMBER		
		2811		

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/625,616	KUMAGAI ET AL.
	Examiner	Art Unit
	Hung Vu	2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 11 February 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-16 is/are pending in the application.
 - 4a) Of the above claim(s) 10-16 is/are withdrawn from consideration.
- 5) Claim(s) 3-9 is/are allowed.
- 6) Claim(s) 1 and 2 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/24/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Invention of Embodiment I of Figures 1-12, claims 1-9, in the reply filed on 02/11/05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Applicant's election without traverse of Invention of Embodiment I of Figures 1-12, claims 1-9, in the reply filed on 02/11/05 is acknowledged.
3. Claims 10-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 02/11/05.

Specification

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

6. Claim 5 is objected to because of the following informalities: In claim 5, line 4, "the a" should be changed to "the" for clarity. Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Sato et al.

(PN 3,603,848).

Sato et al. discloses, as shown in Figures 1-8, a semiconductor device including n-channel field-effect transistors (33) and p-channel field-effect transistors (32) formed on a semiconductor substrate, wherein:

the transistors are disposed with a gate electrode (26,27) and a source and drain (15,16,22,23) corresponding thereto;
a direction joining the source and the drain is formed in a direction along a crystal axis or an axis equivalent to the crystal axis.

Note that it is inherent that when the p-channel having the direction joining the source and the drain being formed along the crystal axis, the compression strain of the p channel field-effect transistors would be greater than crystal strain of channel portions of the n-channel field-effect

transistors. Likewise, it is inherent that when the n-channel having the direction joining the source and the drain being formed along the crystal axis, the tensile strain of the n channel field-effect transistors would be greater than crystal strain of channel portions of the p-channel field-effect transistors.

8. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Sayama et al. (Reference AU, of record).

Sayama et al. discloses, as shown in Figures 1-4, a semiconductor device including n-channel field-effect transistors and p-channel field-effect transistors formed on a semiconductor substrate, wherein:

the transistors are disposed with a gate electrode and a source and drain corresponding thereto;

a direction joining the source and the drain is formed in a direction along a crystal axis or an axis equivalent to the crystal axis.

Note that it is inherent that when the p-channel having the direction joining the source and the drain being formed along the crystal axis, the compression strain of the p channel field-effect transistors would be greater than crystal strain of channel portions of the n-channel field-effect transistors. Likewise, it is inherent that when the n-channel having the direction joining the source and the drain being formed along the crystal axis, the tensile strain of the n channel field-effect transistors would be greater than crystal strain of channel portions of the p-channel field-effect transistors

Allowable Subject Matter

9. Claims 3-9 are allowed.

10. The following is an examiner's statement of reasons for allowance:

Applicant's claims 3-9 are allowable over the references of record because none of these references disclose or can be combined to yield the claimed semiconductor device comprising the insulating film including tensile stress, in which the insulating film that is formed in regions at the peripheries of the p-channel field-effect transistors and positioned in directions parallel and orthogonal to the direction joining the source and the drain including an insulating film that is thinner than the insulating film that is formed in regions at the peripheries of the n-channel field-effect transistor and positioned in directions parallel and orthogonal to the direction joining the source and the drain, in combination with the remaining claimed limitations of claim 3;

the insulating film including tensile stress, wherein the insulating film that is thinner than the insulating film formed at regions positioned between the first n-channel field-effect transistors and the second n-channel field-effect transistors is formed on or not disposed on, field regions adjacent to the active regions formed by the p-channel field-effect transistors, as recited in claim 5;

the insulating film including tensile stress is formed at upper portions of the n-channel field-effect transistors and the p-channel field-effect transistors, and the insulating film that is thinner than the insulating film formed at regions positioned between first n-channel field-effect transistors and second n-channel field-effect transistors is formed on, or not disposed on, field regions adjacent to active regions of the p-channel field-effect transistors, as recited in claim 6;

the insulating film including compression stress, in which the insulating film that is formed in regions at the peripheries of the n-channel field-effect transistors and positioned in direction parallel and orthogonal to the direction joining the source and the drain including an insulating film that is thinner than the insulating film that is formed in regions at the peripheries of the p-channel field-effect transistor and positioned in directions parallel and orthogonal to the direction joining the source and the drain, in combination with the remaining claimed limitations of claim 7;

the insulating film including compression stress, wherein the insulating film that is thinner than the insulating film formed at regions positioned between the first p-channel field-effect transistors and the second p-channel field-effect transistors is formed on or not disposed on, filed regions adjacent to the active regions formed by the n-channel field-effect transistors, as recited in claim 8;

the insulating film including compression stress is formed at upper portions of the n-channel field-effect transistors and the p-channel field-effect transistors, and the insulating film that is thinner than the insulating film formed at regions positioned between first p-channel field-effect transistors and second p-channel field-effect transistors is formed on, or not disposed on, field regions adjacent to active regions of the n-channel field-effect transistors, as recited in claim 9.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung K. Vu whose telephone number is (571) 272-1666. The

examiner can normally be reached on Mon-Thurs 6:00-3:30, alternate Friday 7:00-3:30, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272-1732. The Central Fax Number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Vu

April 19, 2005

Hung Vu
Hung Vu

Primary Examiner